

The following protocol organizes the regenerative compounds into a 4-part rotating schedule (Day A and Day B). This structure maximizes **synergistic pairings** identified in the 2024–2025 literature while respecting **circadian biology**—utilizing energy-demanding repair mechanisms in the morning and central nervous system (CNS) dampening effects in the evening.

Palmitoylethanolamide (PEA) is included in every dose as the "Site Foreman," necessary to maintain the anti-inflammatory tone required for the other compounds to function 1, 2. --- ####

Day A: Structural Repair & Cellular Debris Clearance Theme: Clearing the "rubble" of Wallerian degeneration and securing the cell against apoptosis. ##### **Set 1: Morning (The "Demolition & Energy" Stack)** *Timing Logic:* Autophagy (cellular cleanup) and mitochondrial biogenesis are metabolically demanding processes best supported during active hours. 1. **PEA (Palmitoylethanolamide) + Luteolin:** * **Role:** The Foundation. Luteolin is added here specifically to stabilize PEA microparticles and prevent oxidative degradation, creating a "co-ultramicronized" effect 3. 2. **Spermidine:** * **Synergy:** The "Sleeve Builder" effect.

Spermidine clears the cellular debris (autophagy) that PEA otherwise cannot remove. This clears the physical path for the myelin PEA is attempting to rebuild 4. 3. **Morin:** * **Role:** The "Energy Manager." By inhibiting PARP, Morin stops the cell from draining its ATP reserves on minor DNA repairs, ensuring the nerve has the "battery power" for the heavy lifting of autophagy 5. 4. **Vitexin:** * **Role:** The "Power Plant Tech." Targets the AIM2 inflammasome to repair mitochondrial leaks, ensuring the energy generated is clean and does not trigger further inflammation 6. ##### **Set 2: Evening (The "Containment & Quarantine" Stack)** *Timing Logic:* This stack focuses on "closing the doors" to excitotoxicity and preventing the spread of death signals (calcium waves) which often spike during the inactivity of sleep. 1. **PEA (Palmitoylethanolamide):** * **Role:** Continues PPAR- α activation to maintain the "pro-homeostatic" state during sleep 1. 2. **Octanol:** * **Role:** The "Blast Door." It blocks gap junctions (Connexin-43) to stop "death signals" from spreading from injured cells to healthy neighbors during the night 7. 3. **Thyme Extract (*T. algeriensis*):** * **Role:** The "Wire Cutter." Inhibits Caspase-3 (the self-destruct sequence). It is placed here to work alongside Octanol in a containment strategy—Octanol seals the room; Thyme disarms the bomb 8. 4. **Sweet Flag (*Acorus calamus*) & *Alstonia scholaris*:** * **Role:** Calcium Modulation. These act similarly to gabapentinoids (but via natural phytochemicals) to reduce calcium accumulation and excitotoxicity, promoting a calmer neuro-environment for sleep 9, 10. --- ####

Day B: Functional Restoration & Central Protection Theme: Restoring reflex arcs, metabolic defense, and treating the "ghost pain" in the spine. ##### **Set 3: Morning (The "Shield & Reflex" Stack)**

Timing Logic: This stack involves stimulating reflexes and macrophage motility, requiring systemic circulation and movement. 1. **PEA + Acetyl-L-Carnitine (ALC):** * **Synergy:** A clinically validated pairing for functional recovery. ALC provides the mitochondrial fuel for nerve conduction while PEA repairs the insulation 11. 2. **Liposomal Curcumin + Green Tea (EGCG):**

* **Synergy:** The "Barrier Protectors." Curcumin (must be liposomal for penetration) handles external immune attacks (macrophage polarization), while Green Tea scrubs internal oxidative rust (SOD/Catalase upregulation) 12. Green tea is placed AM due to potential caffeine content.

3. **Alpha-Lipoic Acid (ALA):** * **Synergy:** The "Universal Antioxidant" paired with PEA to address the oxidative stress that PEA itself cannot neutralize 3. 4. **Anethole:** * **Role:** The "Insulation Guard." Specifically prevents the thinning (atrophy) of the nerve, acting as a morphological preservative during the day's metabolic stress 13. ##### **Set 4: Evening (The**

"Spinal Soother" Stack) *Timing Logic:* These compounds target the Central Nervous System (Spinal Cord) to dampen central sensitization, which is often responsible for night pain. 1. **PEA (Palmitoylethanolamide):** * **Role:** Reduces reactive astrogliosis (scarring) in the spinal cord 14. 2. **Rosemary (*Rosmarinus officinalis*) + Resveratrol:** * **Synergy:** The **"Spinal Soothers."** Rosemary prevents the death of inhibitory neurons in the spine (the brakes), while Resveratrol activates SIRT1 to turn down the "volume" of pain signals. This combination treats the central memory of the pain 15. 3. **Lithium Chloride + Vitamin E:** * **Synergy:** The "Exploratory Pair." Lithium mimics neurotrophic growth factors (NGF), while Vitamin E cleans up the metabolic smoke from that growth. This combination is linked to restoring "exploratory behavior" and well-being 16. 4. **Fumagillin:** * **Role:** Angiogenesis Inhibitor. It prevents new blood vessels from invading the spinal cord, effectively cutting off the supply line for inflammation during the restorative sleep phase 17. --- **### Summary of the Protocol** | Timing | **Day A: Structure & Debris | Day B: Function & Spine** | | :--- | :--- | :--- | | **Morning | "Demolition Crew"**PEA + LuteolinSpermidineMorinVitexin | **"Reflex Shield"**PEA + ALCCCurcumin (Liposomal)Green Tea (EGCG)Alpha-Lipoic AcidAnethole | | **Evening | "Blast Doors"**PEAOctanolThyme ExtractSweet Flag / Alstonia | **"Spinal Reset"**PEARosemary + ResveratrolLithium + Vitamin E¹Fumagillin | **Note on PEA:** In all sets, PEA is the "anchor." Its safety profile allows it to be the constant variable that modifies the disease state, allowing the alternating compounds to target specific mechanisms (autophagy vs. spinal dampening) without interference 2, 18.